

BICD 100 Genetics
Fall 2020 (A00, B00, C00) – Hybrid Course

Instructor: Goran Bozinovic

Lectures: MWF 1-1:50 PM

Location – in Person: CENTR 101

Location -via Zoom:

<https://ucsd.zoom.us/j/94964068498?pwd=SkwOS25pQ1g2UE1lUjFrWmNrVisrdzO9>

Meeting ID: 949 6406 8498

Passcode: fun13

Course website: <https://canvas.ucsd.edu/courses>

Textbook: *Essentials of Genetics* by Klug, Cummings, Spencer, Palladino. 10th ed, Benjamin Cummings

Text website: www.geneticsplace.com

Recommended supplement: *Essentials of Genetics: Study Guide and Solutions Manual* by Nickla H, 10th ed. (older editions are ok)

Course Description: An introduction to the principles of heredity emphasizing diploid organisms. Topics include Mendelian inheritance and deviations from classical Mendelian ratios, pedigree analysis, gene interactions, gene mutation, linkage and gene mapping, reverse genetics, population genetics, and quantitative genetics.

Goals: Genetics is important, interesting, and fundamental for modern biology. Genes are basic units of biology and inheritance for ALL life forms. This course will introduce and explore gene discovery and related studies, and their use in analysis and manipulation of biological function. We will also explore how genes are inherited and the importance of genetic variation in populations. We will use quantitative classical and modern approaches (problem solving) to predict genetic outcomes.

Prerequisites: BILD 1. Review the relevant material if necessary.

Contact Information

Email: gbozinovic@ucsd.edu

Office: HSS 1145G

Office hours: via Zoom by appointment

When emailing, please put BICD100 or Genetics in the subject line, or your email may not be read promptly. Please use gboznovic@ucsd.edu email to contact me

Course Website (Canvas):

- For class-related materials, please access the Canvas at <https://canvas.ucsd.edu> using your username and password.
- Make sure to log in often and check for announcements.
- Post all class-related questions on the discussion board.
- Each IA section will have its own folder, so that section-specific materials can be posted and retrieved accordingly.

Discussion Sections and Instructional Assistants (IAs):

- You must be enrolled and attend / participate in a section in person or virtually, since 26% of your grade is determined by section participation (see grading below). If not, you will not receive credit for problem sets (see problem set section below), nor will you be able to take the quizzes, which will be administered during the section at the IA's discretion.

Sec	Day / Time	Room	IA	Discussion Zoom Link
A01, B01, C01	M 11-11:50	CENTR 119	Ethan Zhu	yszhu@ucsd.edu
A02, B02, C02	M 12-12:50	LEDDN AUD	Derrick Lee	del092@health.ucsd.edu
A03, B03, C03	M 2-2:50	LEDDN AUD	Derrick Lee	del092@health.ucsd.edu
A04, B04, C04	F 4-4:50	LEDDN AUD	Lindsey Griffin	lagriffi@ucsd.edu
A05, B05, C05	F 5-5:50	LEDDN AUD	Christine Park	c2park@ucsd.edu

Section meetings start on Monday, Oct 5th.

Discussion Sections Zoom Links:

A01, B01, C01	https://ucsd.zoom.us/j/96329893568?pwd=Q1czODMzQ0tia08zSjNiazR4NmF6dz09 Meeting ID: 963 2989 3568 Password: 064841
A02, B02, C02	https://ucsd.zoom.us/j/6280766164?pwd=dy9nZnZHK0hOVOJZOFFpUU9mUThzUT09 Meeting ID: 628 076 6164 Password: BICD 100
A03, B03, C03	https://ucsd.zoom.us/j/6280766164?pwd=dy9nZnZHK0hOVOJZOFFpUU9mUThzUT09 Meeting ID: 628 076 6164 Password: BICD 100
A04, B04, C04	https://ucsd.zoom.us/j/5222026992?pwd=OFFZSjJ5Z1N6Sk1HS3liZjdRK1RvQT09 Meeting ID: 522 202 6992 Password: Bloiscool
A05, B05, C05	Meeting ID: 381 215 8491 Password: genetics

IA's virtual office hours will be posted on CANVAS by Friday, Oct 9th.

ATTENDANCE – IMPORTANT! This is the HYBRID COURSE: you should attend the lecture IN PERSON ONCE PER WEEK and VIRTUALLY (via ZOOM) TWICE PER WEEK. Make sure to know when you are scheduled to attend in person and please to do not attend when not scheduled. We are limited by 50 students or less per lecture and this attendance format will be strictly enforced. If you are not able to attend in person, synchronous zoom lecture and zoom lecture recordings will be available on CANVAS shortly after each lecture. The same format is applied to discussion section, so please be aware of your discussion schedule. If you are ill, DO NOT attend the lecture / discussion section in person. Should we experience any technical difficulties during the course (loss of internet connection or unstable transmission, etc.), both lectures and discussion sections will be post-recorded and made available on CANVAS shortly after.

Lectures will be held live *via* Zoom beginning Friday, October 2nd (1-1:50 PM). You can access the Zoom lecture log-in on Canvas or by using the link above. Lectures will be held during the time listed in the schedule of classes, and recordings of each Zoom lecture and .pdf lecture slides will be available throughout the quarter on Canvas. Unless you are scheduled to attend the lecture in person, you are highly encouraged to attend synchronous lectures as they will be interactive, and you will be able to ask questions.

Discussion Sections will begin during week 2, on Monday Oct 5th. These will also be held *via* Zoom, and during the sections you will work on exercises that will help you master the course material. You need to attend the discussion section in which you are enrolled in either in person or *via* Zoom; you cannot attend other discussion sections. Discussion section links are listed in the IA information table above and in the discussion section syllabi.

IN-PERSON ATTENDANCE - Classroom Etiquette:

- ALWAYS: cover your face with a mask and exercise proper social distancing, at least 6ft apart
- Attend only lectures according to your schedule: you will attend ONE lecture and ONE discussion section EACH WEEK.
- If you are ill, DO NOT attend the lecture or the discussion section; lecture recordings will be available on CANVAS
- Recordings of any kind in this class are not permitted to maintain a safe learning environment as we often discuss sensitive issues.
- If attending in person - please ask questions. However, make sure that your comments are directed to the class.
- * If you are attending lectures virtually, please post questions *via* Zoom chat (see Zoom participation etiquette details below). IAs will do their best to answer questions posted in Zoom chat during lecture in real-time.
- Turn off your phones and refrain from talking to fellow students during the lecture
- Be considerate to others by not walking in/out of classroom for water/bathroom breaks while the class is in session.
- If you must leave early, please be seated in the aisle seat in the back near the exit

VIRTUAL ATTENDANCE (Zoom) Etiquette:

- Keep your line muted during classes unless the Instructor / IA calls on you to ask a question. If you have a question, please use the "raise hand" function under the "participants" tab. Enabling your video is optional during lectures. Zoom etiquette for section discussions/labs at the discretion of your IA.
- Make sure your line is muted unless you are prompted to ask a question.
- Asking questions: Please ask questions! Student discussion during lectures is vital to course effectiveness. Use the "Raise Hand" option on zoom to notify me that you have a question. Lectures will be "paused" periodically to allow for your questions and/or clarification
- We may not have an opportunity for traditional class discussions on an online platform. If you have a comment or question, please be considerate of class time. To make sure all the questions are addressed, the last 10-15' of each lecture will be reserved for review and discussion.

GRADING POLICY**EXAMS**

There are THREE exams in this course, each worth 100 pts. **ALL EXAMS will be administered VIRTUALLY through CANVAS.** The final exam will focus on the material presented after the Exam 2 and will include important fundamental concepts from the prior portion of the course.

The use of electronic aids during Exams:

Unless you are an exceptionally skilled mathematician, you will need a calculator during the exam. Regarding the usage of other electronic devices, please refer to the ACADEMIC DISHONESTY section at the end of this syllabus.

PROBLEM SETS:

15% of your grade will be based on problem sets. There will be 2 problem sets throughout the course, posted in the TritonEd. They are due in your discussion section the following week. Late assignments will not be accepted!

Problem Set #1 available on Canvas on Friday, Oct 16, Due on Wednesday, Oct 21

Problem Set #2 available on Canvas Wednesday, Dec 2, Due on Monday, Dec 7

- *To make the allotted assignment time fair to all sections, please email your assignment to your IA by midnight of a due date; late assignment will not be accepted*

Discussion Section QUIZ:

There will be three quizzes given in discussion sections worth 15 points each. If your quiz point total is <45, your IA will have the opportunity to award up to 5 more points based on consistent attendance and participation in discussion section to raise your point total to a maximum of 45. *Credit will only be given for quizzes taken in the section you are enrolled in as shown at the online section enrollment site (<http://sections.ucsd.edu>).* Exceptions to this policy will not be made. It is your responsibility to know what section you are enrolled in!

GRADING

Your final grade will be determined by what percentage of 405 points you earn (no exam or quiz scores may be dropped). Points are available as follows:

Midterm 1, 2	200 pts (100 pts each)
Final Exam	100 pts
Section Pop Quizzes (3) / Section attendance	45 pts
<u>Homework Problem Sets (2)</u>	<u>60 pts</u>
Total Points possible	405

Here are *guidelines for the minimum grade* you will receive based on point totals, including extra credit:

≥ 372 points _____	A	315 – 323 _____	C+
364 – 371 _____	A-	291 – 314 _____	C
356 - 363 _____	B+	283 – 290 _____	C-
332 - 355 _____	B	275 – 282 _____	D+
324 – 331 _____	B-	240 – 274 _____	D

**The points / grade scale maybe adjusted based on the overall class performance.*

After the grading is completed, you can view your scores by clicking on “My Grades” on the Canvas course homepage. At the end of the quarter, final grades will also be posted in the UCSD e-grade system. Re-grade requests must be submitted via email (explaining the error you found in the grading of your exam) with your attached exam to your IA within two weeks of when graded exams were first made available; no requests will be considered after this date, except for correction of point addition errors.

Taking the Exam:

- Exams will be posted on Canvas at a specific time (start of lecture). To minimize the effect of a time constraint, you will have 2.5 hrs to complete each exam and email it to your IA. Late submission will not be accepted.
- Once you submit an exam, you will not be able to drop the score or negotiate a reduction of its impact on your grade for any reason (e.g. you decide afterwards you weren't well enough).
- Requests to reconsider any grading must be submitted via email along with your exam to the IA who graded the question within TWO weeks after graded exam are made available.

Extraordinary Circumstances:

- If you have an illness, injury, or personal crisis that you believe will prevent you from performing adequately on an exam, contact the instructor about this problem before the exam to discuss your options. Your excuse must include official documentation (doctor's note).

- If you cannot do this and miss an exam for one of these reasons, you must contact the instructor within 24 hours of the exam to discuss your options. Once you have submitted an exam, you will not be able to drop the score or negotiate a reduction in its impact on your grade for any reason (e.g. you decide afterwards you weren't well enough).

If a section quiz is missed due to a similar sort of problem, contact your IA no later than 24 hours after the missed quiz. The decision for re-taking the quiz will be at your IA's discretion, but will adhere to the same policies stated above (see extraordinary circumstances).

How to do well in this course.

- Read lecture material BEFORE the lecture
- Attend live zoom lectures! Most of the exam-relevant material will be "highlighted" during lectures via screen share
- Turn assignments in on time
- Take your own notes – active note taking is the key to effective learning
- Actively participate in discussion sections
- Ask questions; attend virtual office hours; utilize IAs expertise and assistance
- Do not procrastinate
- Work through the problem sets: **genetics is about probabilities, so it is a *problem-solving science**. It is, therefore, essential to spend time solving problems and applying concepts introduced during lectures. The significant portion of your exams, homework sets, and quizzes will consist of such problems. Learn how to solve problems not just by looking up the answers in the solutions manual.
- When attempting the end-of-chapter exercise and problem sets, you may use the Study Guide and Solution Manual or any other aids on the text website BEFORE seeking clarification during the discussion sessions. This way you will have a good idea of topics that need further explanation and could seek the help of your IA to understand the material.

ACADEMIC DISHONESTY

Please carefully review the "Policy on Integrity of Scholarship" at:

<http://senate.ucsd.edu/manual/appendices/app2.htm>

Academic dishonesty (aka cheating) will not be tolerated in this class. According to UCSD policy, academic dishonesty includes:

- taking an exam for another student; allowing another student to take an exam for you
- copying another student's work on an exam or quiz; allowing another student to copy your work
- altering graded assignments and submitting them for a re-grade

After the grading is completed, you can view your scores by clicking on "my grades" on the TritonEd course homepage. At the end of the quarter, final grades will also be posted here. Re-grade requests must be submitted in writing (explaining the error you found in the grading of your exam) with your exam to Instructor Bozinovic in class **within one week of when graded exams were first made available for pickup**; no requests will be considered after this date, except for correction of point addition errors.

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- taking an exam for another student
- allowing another student to take an exam for you
- copying another student's work on an exam or quiz
- allowing another student to copy your work
- altering graded assignments and submitting them for a re-grade

Altering an exam and submitting it for a re-grade is an incredibly bad idea since an electronic record of the submitted exam is available. Any student caught or suspected of cheating will be reported to the UCSD Academic Integrity Coordinator and the Dean of the student's college. Confirmed cases of cheating will result in the student receiving an F as their final grade and other disciplinary actions determined appropriate by the Academic Integrity Coordinator.

Lecture schedule: **TENTATIVE**, subject to change

Readings - Chapters from Klug *et al.*, Essentials in Genetics

Date	Topic	Chapter
F 10.2	Course Introduction	Discussion
M 10.5	Probabilities, Phenotype; Central Dogma	1
W 10.7	Monohybrid Cross, Mitosis	3 (37-42), 2
F 10.9	Meiosis, Dihybrid Cross, Crosses – p1	2, 3 (49-55)
M 10.12	Meiosis, Dihybrid Cross, Crosses – p2	2, 3 (49-55)
W 10.14	Epistasis, Complementation, Pleiotropy – p1	4 (60-68)
F 10.16	Epistasis, Complementation, Pleiotropy – p2; HW1 posted	4 (60-68)
M 10.19	X-linked mutations	4 (73-85)
W 10.21	Penetrance, Imprinting; HW1 due	4
F 10.23	Sex Determination, Sex Chromosomes (P1)	5
M 10.26	Dosage Compensation	5
W 10.28	Chromosomes, Chromosomal Variation (not on Exam 1)	6
F 10.30	EXAM 1 (via CANVAS, 1 - 3:30 pm)	
M 11.2	Chromosomes, Chromosomal Variation	6
W 11.4	Gene mapping: recombination and linkage	7
F 11.6	Gene Mapping: molecular markers, LODs	7
M 11.9	Bacterial genetics: mutations, conjugations	8
W 11.11	No Class – Veterans Day Holiday	
F 11.13	Bacterial and Phage Genetics, Restriction Enzymes	.pdf suppl.
M 11.16	DNA Structure, Imaging, RLFP	14
W 11.18	DNA Mutations	14
F 11.20	Regulation of gene expression, Prokaryotes (not on Exam 2)	15
M 11.23	EXAM 2 (via CANVAS, 1- 3:30 pm)	
W 11.25	Regulation of gene expression – Eukaryotes	15
F 1.27	No Class – Thanksgiving Holiday	
M 11.30	Regulation of gene expression, RNAi	15 – cont.
W 12.2	Forward and Reverse Genetics HW Posted	21
F 12.4	Quantitative traits, QTL Mapping;	22
M 12.7	Cancer Genetics – I; HW2 due	16
W 12.9	Cancer Genetics - II	16
F 12.11	Developmental, Population and Evolutionary Genomics Seminar	20, 23
M 12.14	FINAL EXAM – 11:30 – 2:30 PM (via CANVAS)	